MedicalXpress

Researchers discover biological markers associated with high-risk pancreatic lesions

February 2 2015

Pancreatic cancer affects approximately 46,000 people each year in the United States and ranks fourth among the leading causes of cancer-related deaths. Only about 6 percent of individuals with pancreatic cancer will live five years after their diagnosis. One reason for this high mortality rate is the lack of effective tools to detect pancreatic cancer early enough to allow its surgical removal. Moffitt Cancer Center researchers are now one step closer to devising an approach to detect pancreatic cancer earlier.

Similar to the development of colon cancer from precancerous polyps, pancreatic cancer can develop from precursor lesions called intraductal papillary mucinous neoplasms (IPMNs), a type of pancreatic cysts that can be detected by computed tomography (CT) scans and magnetic resonance imaging (MRIs). IPMNs can be benign (low-risk) or malignant (high-risk), but it is extremely challenging to accurately differentiate between these two possibilities by imaging or blood tests. The only way to determine the severity of an IPMN is by surgically removing it; however, this is associated with serious risks, including long-term diabetes and death. Alternatively, if a physician decides to watch the progression of the IPMN(s) over time, they may miss an opportunity to cure a patient who may have a potentially life-threatening disease.

Moffitt researchers studied biomarkers called microRNAs to see which may be associated with high-risk IPMNs that warrant more immediate surgical removal. Their study was published in the Jan. 21 edition of *PLoS One*.

"MicroRNAs are small molecules that work as 'master-regulators,' controlling numerous cancer-related processes in the body. MicroRNAs can be detected in tumor tissues and bodily fluids such as blood, and a growing body of evidence suggests they are promising biomarkers of early pancreatic cancer," said first author Jennifer Permuth-Wey, Ph.D., applied research scientist and molecular epidemiologist in the Cancer Epidemiology Program at Moffitt.

The researchers analyzed surgically-removed IPMN tissue from patients who previously had been diagnosed and treated at Moffitt. They discovered that six microRNAs could distinguish between high-risk and low-risk IPMNs. "We also provided evidence that the six microRNAs may contribute to pancreatic cancer progression, said senior author Mokenge P. Malafa, M.D, F.A.C.S., department chair and program leader for Moffitt's Gastrointestinal Oncology Program.

"The hope is that this line of research may eventually lead to a microRNA-based blood test that could be used in conjunction with imaging features and other factors to aid the medical team and patient in accurately predicting disease severity at the time of IPMN diagnosis or follow-up," said Permuth-Wey. "Importantly, this research may also help foster the development of new prevention and early detection strategies for pancreatic cancer," said Malafa.

Provided by H. Lee Moffitt Cancer Center & Research Institute